

SPEAR3 Machine Parameters

Parameter	Operational Value
Beam energy	3 GeV
Injection energy	3 GeV
Current	100-500 mA
Fill pattern	280 bunches, 93-bunch gap, camshaft bunch in gap (Various timing mode fill patterns are available)
Circumference	234.137 m
Radio frequency	476.315 MHz
Bunch spacing	2.1 ns
Horizontal emittance	10 nm*rad
Vertical emittance	14 pm*rad
Critical energy	7.6 keV
Energy spread	0.097%
Lifetime	~50 h @ 100 mA, ~14 h @ 500 mA
e- size (x,y)	Dipole: 140, 14 μm rms Standard ID: 310, 8 μm rms Chicane ID: 300, 5 μm rms
e- divergence (x,y)	Dipole: 180, 2.9 μrad rms Standard ID: 33, 1.7 μrad rms Chicane ID: 34, 2.9 μrad rms
Bunch length	20 psec rms (6.7 mm rms)
Straight sections for IDs (available ID length)	9 x 2.3 m 4 x 3.7 m 2 x 1.5 m (Chicane)